Honors Chemistry \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

January 20, 2010

***Chapter 7 Test***

Honor Pledge: \_\_\_\_\_\_\_\_ (please initial)

Given Information: m/s

J∙s

1. Write the complete electron configuration for tellurium.

2. Underline the valence shell in the configuration above.

3. Identify the number of valence electrons in an atom of tellurium.

4. Show the noble-gas configuration for tellurium.

5. Sketch an orbital diagram for the noble-gas configuration of tellurium. Use 🞏 for orbitals

and ↑ for electrons.

6. How many more electrons does an atom of tellurium need to obey the octet rule?

7. What is the maximum number of electrons in the *n = 4* principle energy level?

8. Which of the following orbitals is highest in energy?

a.) 5s b.) 5p c.) 4d d.) 6s

9. How many orbitals are in the *3s* sublevel?

a.) 1 b.) 2 c.) 5 d.) 10

10. How does the following orbital diagram obey *both* the Aufbau principle and Hund’s rule?

2p

2s

1s

11. A photon of yellow light has a wavelength of 551 nm. Calculate the frequency of this photon of light. Show your work.

12. Which of the following forms of electromagnetic radiation has the greatest frequency?

a.) IR b.) microwaves c.) radio d.) blue light

13. Does the electron transition *n = 4 → n = 2* involve an absorption of energy or an emission of energy? Explain.

14. Which element is represented by the configuration [Ar]4s23d10?

15. What is the energy, in Joules, for a photon of light with a wavelength of 344 nm? What is the energy for one mole of photons of this light? Show your work.

16. Which sublevel designation is impossible?

a.) 3p b.) 2p c.) 3f d.) 5p

17. Why are two electrons in an orbital represent by opposite arrows?

18. Which color of visible light is highest in energy?

a.) yellow b.) red c.) green d.) orange

19. Write the complete electron configuration for aluminum.

20. Give the name of another element that has a similar valence shell as aluminum.

21. An element with a valence shell shown below in an orbital diagram is found in what group on the periodic table?

s p

22. How many total orbitals are present in the *n = 3* energy level?

23. The electron configuration for which of the following elements has each electron paired up with another electron in an orbital?

a.) Fe b.) P c.) Sr d.) Cl